

## Appendix 2: Quantifying Emissions Reductions, Cost Effectiveness, and Health Benefits

### a. Emissions Reductions

To estimate the anticipated emissions reductions from your project, use the Diesel Emissions Quantifier (DEQ) found at [www.epa.gov/cleandiesel/quantifier](http://www.epa.gov/cleandiesel/quantifier). The data you input into the Applicant Fleet Description (template provided) is the same data that should be inputted into the DEQ. For assistance getting started, please review the DEQ Frequently Asked Questions document found at [www.epa.gov/cleandiesel/quantifier](http://www.epa.gov/cleandiesel/quantifier) or the complete User's Guide (<http://www.epa.gov/cleandiesel/documents/420b10033.pdf>). Please note you can average certain fields together in order to minimize the number of DEQ runs required (for example, the data for a set of refuse haulers may be averaged together into one DEQ run).

After inputting all the necessary fleet data into the DEQ and hitting the “Quantify Emissions” button, you will be directed to an Emissions Results page. On this page, under “Summary Emissions Results,” you should retrieve the results for Lifetime Amount Reduced for each of the listed pollutants (NO<sub>x</sub>, PM, HC, CO, CO<sub>2</sub>) and enter these results in Section 2 of your Project Narrative Template. An example of the Emissions Results page is shown below.

Lifetime	NO <sub>x</sub> (tons)	PM (tons)	HC (tons)	CO (tons)	CO <sub>2</sub> (tons)	Diesel- Equivalent (gallons)
Baseline of Entire Fleet	60.0163	1.3924	2.2921	9.8673	9,077.5800	817,800.0000
Baseline of Engines Retrofitted	60.0163	1.3924	2.2921	9.8673	9,077.5800	817,800.0000
Percent Reduced(%)	0.0%	20.0%	50.0%	30.0%	0.0%	0.0%
<b>Amount Reduced</b>	<b>0.0000</b>	<b>0.2785</b>	<b>1.1461</b>	<b>2.9602</b>	<b>0.0000</b>	<b>0.0000</b>
Amount Emitted After Retrofit, Retrofitted Engines	60.0163	1.1139	1.1461	6.9071	9,077.5800	817,800.0000
Amount Emitted After Retrofit, Entire Fleet	60.0163	1.1139	1.1461	6.9071	9,077.5800	817,800.0000

## **b. Cost-Effectiveness**

To calculate the cost-effectiveness of your project, divide the total amount of funding required for your project (this amount includes any mandatory cost-share funds required for engine upgrade, repower, or replacement projects, but does not include any voluntary cost-share funds) by the total Lifetime Amount Reduced (in tons) for each pollutant, as calculated above by the DEQ.

For example, you are proposing a \$50,000 repower project. Per the terms of the grant, you will be responsible for a mandatory cost-share of \$25,000, and you will be requesting grant funds for the remaining \$25,000. Using the emissions results shown in section (a) of this appendix, and considering the total project cost of \$50,000, the cost effectiveness for each pollutant would be calculated as follows:

PM:  $\$50,000 \div 0.2785\text{tons} = \$179,533/\text{ton}$   
HC:  $\$50,000 \div 1.1461\text{tons} = \$43,626/\text{ton}$   
CO:  $\$50,000 \div 2.9602\text{tons} = \$16,891/\text{ton}$

Once the results have been calculated in this manner, enter the total cost effectiveness for each of the listed pollutants (NO<sub>x</sub>, PM, HC, CO, CO<sub>2</sub>) in Section 2 of your Project Narrative Template.

### **c. Public Health Benefits**

The extent that a project will maximize public health benefits depends on both the population that will experience improvements in air quality due to the project, and the amount of emission reductions that will take place. Proposals should therefore describe both the population that will be affected by the project and the emission reductions that will result from the project. This description must be qualitative and quantitative. Quantitative health benefits can be generated using the Diesel Emissions Quantifier (DEQ) which can be found at [www.epa.gov/cleandiesel/quantifier/](http://www.epa.gov/cleandiesel/quantifier/). However, the DEQ does not include quantification of the health benefits for all types of projects. If the DEQ is not able to quantify health benefits for your specific project, a qualitative description alone will be acceptable. Note that the DEQ can quantify health benefits from particulate matter (PM) emission reductions, but cannot quantify health benefits from other emission reductions like NO<sub>x</sub>, CO, HC or CO<sub>2</sub>. Please refer to the DEQ instructions page that can be accessed from the DEQ home page for step-by-step instructions on how to calculate PM health benefits from your project.